

WHAT IS CLAIMED IS:

1. A color light emitting display device, comprising:
 - a plurality of emissive regions corresponding to a plurality of color components, wherein
 - the plurality of emissive regions comprises:
 - a plurality of emissive elements each having an emissive element layer between two electrodes and which emit light of the same color, and
 - 10 a plurality of color modifying elements provided at a side of the device closer to a side to be viewed than the emissive elements corresponding to at least some of the plurality of emissive elements, for emitting light having an emission spectrum which is at least partially different from an emission spectrum of incident light;
 - 15 the emission light from the plurality of emissive elements is viewed, in the emissive regions corresponding to the plurality of the color modifying elements, through the corresponding color modifying elements; and
 - areas of the plurality of emissive regions correspond to ratios of modification efficiencies between luminance of light emitted from the color modifying element and luminance of light incident on the color modifying element among different color components of the plurality of color components, and to luminance required for each color component necessary for white display.
- 25 2. A color display device according to Claim 1, wherein the areas of the plurality of emissive regions are directly proportional to ratios among the color components between required luminance of the color components necessary for the white display and the luminance

of light emitted from the color modifying element.

3. A color display device according to Claim 1, wherein the color modifying element filters the incident light and allows transmission
5 of light of a specific wavelength band.

4. A color display device according to Claim 3, wherein the modification efficiency of the color modifying element corresponds to a transmission efficiency of the color modifying element.

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5. A color display device according to Claim 1, wherein the color modifying element changes the incident light into light of a different wavelength and emits the changed light.

15 6. A color display device according to Claim 5, wherein the modification efficiency of the color modifying element corresponds to a color changing efficiency of a color changing material.

7. A color display device according to Claim 1, wherein the color modifying element changes the incident light into light of a different wavelength, filters the changed light, and allows transmission of
20 light of a specific wavelength band.

8. A color display device according to Claim 1, wherein when a power
25 is supplied with the same current density to the emissive elements provided in the plurality of emissive regions and light is emitted, a predetermined white display is achieved on a side to be viewed.

9. A color display device according to Claim 1, wherein the color

modifying element is provided between the emissive element and the side of the display to be closer to the side to be viewed, in emissive regions having a required color component for the corresponding emissive regions which is different from the color component of 5 emission color of the emissive element.

10. A color light emitting display device, comprising:

a plurality of emissive regions corresponding to a plurality of color components, wherein

10 the plurality of emissive regions comprises:

a plurality of emissive elements each having an emissive element layer between two electrodes and which emit light of the same color, and

15 a plurality of color modifying elements provided on a side of the device closer to a side to be viewed than the emissive element to correspond to at least some of the plurality of emissive elements, for emitting light having an emission spectrum which is at least partially different from an emission spectrum of incident light;

20 light emission from the plurality of emissive elements is viewed, in the emissive regions corresponding to the plurality of color modifying elements, through the corresponding color modifying element and at least one layer which absorbs at least a portion of incident light, and

25 the areas of the plurality of emissive regions correspond to ratios of modification efficiencies corresponding to luminance of incident light and luminance of emitted light in the color modifying element and transmission efficiencies of the at least one layer absorbing at least a portion of the incident light, among different color components of the plurality of color components, and to a

required luminance for each color component necessary for white display.

11. A color display device according to Claim 10, wherein the areas
5 of the plurality of emissive regions are directly proportional to
a ratio, regarding each color component, between luminance of light
emitted through the color modifying element and the at least one
layer for absorbing at least a portion of the incident light and
the luminance required for each color component necessary for white
10 display.

12. A color display device according to Claim 10, wherein the color
modifying element filters incident light and allows transmission
of light of a specific wavelength band.

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13. A color display device according to Claim 12, wherein the
modification efficiency of the color modifying element corresponds
to a transmission efficiency of the color modifying element.

20 14. A color display device according to Claim 10, wherein the color
modifying element changes the incident light into light of a different
wavelength and emits the changed light.

25 15. A color display device according to Claim 14, wherein the
modification efficiency of the color modifying element corresponds
to a color changing efficiency of a color changing material.

16. A color display device according to Claim 10, wherein when a
power is supplied with the same current density to the emissive

elements provided in the plurality of emissive regions and light is emitted, a predetermined white display is achieved on a side to be viewed.

5 17. A color display device according to Claim 10, wherein the at least one layer which absorbs at least a portion of the incident light includes an optical function layer.

10 18. A color display device according to Claim 10, wherein the at least one layer which absorbs at least a portion of the incident light includes an insulating layer which is formed between the emissive element and a side of the device in which display is viewed.

15 19. A color display device having a first emissive region and a second emissive region associated with different color components, the color display device comprising:

a plurality of emissive elements each having an emissive element layer between two electrodes and which emit light of the same color, and

20 a first color modifying element and a second modifying element provided on a side of the device closer to a side to be viewed than the emissive element and corresponding to at least some of the plurality of emissive element, for emitting light of an emission spectrum which is at least partially different from an emission spectrum of the incident light, the first and second color modifying element emitting light of different colors, wherein

in the first emissive region, emission light from the emissive element is viewed through the first color modifying element;

in the second emissive region, emission light from the emissive

element is viewed through the second color modifying element;
a modification efficiency corresponding to a ratio of light
emitted from the first color modifying element with respect to light
incident on the first color modifying element is higher than a
5 modification efficiency corresponding to a ratio of light emitted
from the second color modifying element with respect to light incident
on the second color modifying element, and
an area of the first emissive region is smaller than an area
of the second emissive region.

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20. A color display device according to Claim 19, wherein a ratio
between the areas of the first emissive region and the second emissive
region corresponds to a ratio between:

15 a luminance, required for white color display, of the color
component corresponding to the first emissive region with respect
to a luminance of the light emitted from the first color modifying
element; and

20 a luminance, required for white color display, of the color
component corresponding to the second emissive region with respect
to a luminance of the light emitted from the second color modifying
element.

21. A color display device having a first emissive region and a
second emissive region associated with different color components,
25 the color display device comprising:

a plurality of emissive elements each having an emissive
element layer between two electrodes and which emit light of the
same color, and

a first color modifying element and a second color modifying

lement provided on a side of the device closer to the side to be viewed than the emissive element and corresponding to at least some of the plurality of emissive elements, for emitting light of an emission spectrum which is at least partially different from an emission spectrum of the incident light, the first and second color modifying element emitting light of different colors, wherein

5 in the first emissive region, emission light from the emissive element is viewed through the first color modifying element;

 in the second emissive region, emission light from the emissive

10 element is viewed through the second color modifying element; and

 when areas of the first and second emissive regions are S_1 and S_2 , luminance of incident light to the first and second color modifying elements are L_1 and L_2 , transmission efficiencies of the first and second color modifying elements are TE_1 and TE_2 , and

15 luminance of a first color component required in the first emissive region and luminance of a second color component required in the second emissive region for realizing a predetermined color by addition of colors are a_1 and a_2 , the condition,

20 $S_1:S_2 = a_1/(L_1 \cdot TE_1):a_2/(L_2 \cdot TE_2)$

is satisfied.

22. A color display device having a first emissive region and a second emissive region associated with different color components, the color display device comprising:

25 a plurality of emissive elements each having an emissive element layer between two electrodes and which emit light of the same color; and

a first color modifying element and a second color modifying element provided on a side of the device closer to the side to be viewed than the emissive element and corresponding to at least some of the plurality of emissive elements for emitting light of an emission spectrum which is at least partially different from an emission spectrum of the incident light, the first and second color modifying elements emitting light of different colors, wherein

in the first emissive region, light emission from the emissive element is viewed through the first color modifying element;

10 in the second emissive region, light emission from the emissive element is viewed through the second color modifying element; and

when areas of the first and second emissive regions are S_1 and S_2 , luminance of incident light to the first and second color modifying elements are L_1 and L_2 , transmission efficiencies of the 15 first and second color modifying elements are TE_1 and TE_2 , luminance of the first color component required in the first emissive region and luminance of the second color component required in the second emissive region for realizing a predetermined color by addition of colors are a_1 and a_2 , and luminance halflife of the first color 20 component in the first emissive region and luminance halflife of the second color component in the second emissive regions when the emissive elements in the first and second emissive regions are driven by a current having the same current density are T_1 and T_2 , the condition,

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$$S_1:S_2 = a_1/(L_1 \cdot TE_1 \cdot T_1) : a_2/(L_2 \cdot TE_2 \cdot T_2)$$

is satisfied.

23. A color display device according to Claim 22, wherein the luminance halflife of the first color component in the first emissive region and the luminance halflife of the second color component in the second emissive region are periods in which luminance of light of
5 the first color component and light of the second color component are halved when the emissive elements of the first and second emissive regions are driven by currents having the same current density after an aging treatment is applied.
- 10 24. A color display device according to Claim 23, wherein a rate of degradation of emission luminance is constant in at least one of the first and second color components.
25. A color display device comprising:
15 a plurality of emissive regions corresponding to a plurality of color components, wherein
the plurality of emissive regions comprises:
a plurality of emissive elements each having an emissive element layer between two electrodes and which emit light of the
20 same color;
a plurality of color modifying elements provided at a side of the device closer to the side to be viewed than the emissive element and corresponding to at least some of the plurality of emissive elements, for emitting light having an emission spectrum which is
25 at least partially different from an emission spectrum of incident light, wherein
in emissive regions to which the plurality of color modifying elements correspond, light emission from the plurality of emissive elements is viewed through the corresponding color modifying

element; and

areas of the plurality of emissive regions correspond to ratios
of modification efficiencies corresponding to luminance of incident
light and luminance of emitted light in the color modifying element
5 among different color components of the plurality of color components
and to luminance required for each color component necessary for
realizing a predetermined color represented by addition of colors.